CLAIMS

1. A method of damaging target cells in a subject, the method comprising administering to the subject

(1) a compound comprising a target-cell specific binding portion and a portion capable of converting a substrate to acetaldehyde; and

(2) a substrate which is converted to acetaldehyde by the portion capable of converting said substrate to acetaldehyde, and optionally

(3) a component that is capable of inhibiting aldehyde dehydrogenase,

wherein step (2) is optional when the portion capable of converting a substrate to acetaldehyde is an enzymatically active portion of pyruvate decarboxylase.

2. A method according to claim 1 wherein the compound comprises a polynucleotide comprising a target cell-specific promoter operably linked to a polynucleotide encoding a polypeptide capable of converting a substrate to acetaldehyde;

3. A method according to claim 1 wherein the compound comprises a system for targeting a portion capable of converting a substrate to acetaldehyde to a target cell said system comprising
(i) a target-cell specific portion further comprising a lock component and
(ii) a portion capable of converting a substrate to acetaldehyde further comprising a key component

wherein said key component interacts specifically and with high affinity with the lock component or wherein said system further comprises an adapter component that interacts specifically and with high affinity with both the lock and the key component.

4. A method according to any preceding claim in which the portion or polypeptide capable of converting a substrate to acetaldehyde does so as a result of its enzymatic activity.

5. A method according to according to any preceding claim in which the target-cell specific portion comprises an antibody or part thereof.

6. A method according to according to any preceding claim in which the target-cell specific portion is capable of selectively binding to a cell surface entity.

7. A method according to Claim 6 in which the cell surface entity is a tumour-associated antigen.

8. A method according to any one of Claims 1 to 7 in which the target cell specific portion comprises a liposome.

9. A method according to according to any preceding claim in which the portion of the compound capable of converting a substrate to acetaldehyde is an enzymatically active portion of alcohol dehydrogenase or catalase or a microsomal oxidase or pyruvate decarboxylase.

10. A method according to claim 3 in which the lock component is biotin and the key component is streptavidin/avidin or *vice versa,* or the adapter component is streptavidin/avidin and both lock and key component are biotin.

11. A method according to any one of Claims 1 to 10 in which the target cell specific portion and the portion capable of converting a substrate to acetaldehyde are fused within a single polypeptide.

12. A method according to any one of Claims 1 to 11 in which

administration of the substrate starts after the level of activity capable of converting a substrate to acetaldehyde in the extracellular fluid has declined to a therapeutically acceptable value.

13. A method according to any one of Claims 1 to 12 in which a radiation therapy is also administered to the subject.

14. A composition comprising a compound as defined in any of claims 1 to 11.

15. A composition according to claim 14 wherein the portion or polypeptide capable of converting a substrate to acetaldehyde is an enzymatically active portion of catalase or a microsomal oxidase or pyruvate decarboxylase, or of human alcohol dehydrogenase, preferably alcohol dehydrogenase $\beta 2$.

16. A composition according to claim 14 or claim 15 further comprising a substance which is capable of inhibiting aldehyde dehydrogenase which substance is preferably Disulfiram.

17. A composition according to any of claims 14 to 16 further comprising a cofactor for the acetaldehyde producing portion which cofactor is preferably NAD^+.

18. A composition according to any of claims 14 to 17 further comprising a chemotherapeutic agent.

19. A composition according to any of claims 14 to 18 further comprising an immunosuppressive agent.

20. A composition according to any of claims 14 to 19 for use in medicine.

21. Use of a composition according to any of claims 14 to 19 in the manufacture of a medicament for the treatment of cancer.

22. Use of ethanol or pyruvate in the manufacture of a medicament for the treatment of cancer.

23. A therapeutic system or kit comprising a compound or system as defined in any of claims 1-11, or a composition as defined in any of claims 14 to 19, and a second component which is converted to acetaldehyde by the portion or polypeptide capable of converting a substrate to acetaldehyde, and optionally a third component that is capable of inhibiting aldehyde dehydrogenase.

24. A therapeutic system ir kit according to claim 23 in which the aldehyde producing portion is a catalytically active portion of alcohol dehydrogenase, the second component is ethanol and the third component is Disulfiram.

25. Human alcohol dehydrogenase or pyruvate decarboxylase or catalase or a microsomal oxidase or a catalytically active portion thereof for use in medicine.

26. Use of alcohol dehydrogenase or catalase or a microsomal oxidase or pyruvate decarboxylase or a catalytically active portion thereof in the manufacture of a medicament for the treatment of cancer.

27. A method of damaging target cells in a subject, the method comprising administering to the subject

(1) a nucleic acid encoding a compound capable of converting a substrate to acetaldehyde; and

(2) a substrate which is converted to acetaldehyde by the portion capable of converting said substrate to acetaldehyde, and optionally

(3) a component that is capable of inhibiting aldehyde dehydrogenase,

wherein step (2) is optional when the portion capable of converting a substrate to acetaldehyde is an enzymatically active portion of pyruvate decarboxylase.

28. A method according to claim 27 wherein the nucleic acid is in the form of a viral vector, preferably a DNA based viral vector, preferably an adenovirus derived viral vector.